

Ghent University Global Campus

Academic year 2015-2016

Semester 0

1. Title

Mathematics 1: Introduction to Engineering Mathematics

2. Professor Marjon Blondeel

(e-mail address) marjon.blondeel@ugent.be

(office number) TBD

(office telephone number) TBD

(office hours) by appointment

(contact information of a teaching assistant) n.a.

3. Meeting time and location

TBD

4. Course size

Credits	5.0	
Study Time	90 hours	
Contact Hours	60 hours	
	Lecture	30 hours
	Guided exercises	30 hours

5. Teaching languages

English

6. Keywords

Algebra, trigonometry, two-dimensional analytical/coordinate geometry, differential calculus, integral calculus

7. Level

Introductory

8. Position of the course

This course is basic course in mathematics. It contains the prerequisites that are needed for the mathematics courses in the programs.

9. Content

1. Algebra: Binomial theorem, arithmetic and geometric means and series, theory of equations, mathematical induction, basic matrix algebra.
2. Trigonometry: trigonometric functions, formulae and equations, relations between sides and angles of a triangle.
3. Two-dimensional analytical/coordinate geometry: Cartesian coordinates, equation of a straight line, equation of a circle.
4. Differential calculus: functions of a real variable, limits and continuity, derivatives, geometrical interpretation of the derivative, maximum and minimum values of functions.
5. Integral calculus: indefinite and definite integrals, integration by parts, substitution, partial fractions, applications of definite integrals

Week 1
Binomial theorem, arithmetic, geometric and harmonic means and series.
Week 2
Theory of equations, Mathematical induction, basic matrix algebra.

Week 3	
Trigonometric functions.	
Week 4	
Trigonometric formulae and equations.	
Week 5	
Relations between sides and angles of a triangle, cartesian coordinates.	
Week 6	
Equation of a straight line.	
Week 7	
Equation of a circle, functions of a real variable.	
Week 8	
Limits and continuity, derivatives.	
Week 9	
Geometrical interpretation of the derivative, maximum and minimum values of a function.	
Week 10	
Indefinite and definite integrals.	
Week 11	
Integration by parts, substitution and partial fractions.	
Week 12	
Application of definite integrals.	
10. Initial competences	
Secondary school knowledge of mathematics.	
11. Final competences	
To have the mathematical background that is needed to follow the mathematics courses in the program.	
12. Teaching methods	
Lectures	
Guided exercises	
13. Learning Materials	
A combination of notes provided in the class and power point slides.	
14. References	
A text book will be provided.	
15. Evaluation moments	
Periodic and non-periodic evaluation	
16. Evaluation methods	
This is a non credit course.	
Mid-term exam: Written exam with open questions	20%
Final Exam: Written exam with open questions	80%